REMARKS/ARGUMENTS

The Office Action mailed March 10, 2004, has been received and reviewed. Claims 1 through 42 are currently pending in the application. Claims 1 through 33 stand rejected, and Claims 34 through 42 have been withdrawn in response to a restriction requirement as set forth below.

Per this response, Applicants have cancelled claims 15, 16, 20 through 22 and 34 through 42, amended claims 1 through 4, 6 through 8, 14, 17 and 18, and respectfully request reconsideration of the application as amended herein.

Restriction Requirement

Applicants herein acknowledge the restriction requirement in the Office Action. The Office has identified the following groups of claims as being drawn to separate inventions:

Group I – claims 1-33, drawn to a method of forming an ablative coating on at least a portion of a structure, classified in class 264, subclass 275.

Group II – claims 34-42, drawn to an aeroskirt component, classified in class 428, subclass 411.1+.

Applicants hereby affirm the verbal election made on February 12, 2004, to prosecute the claims of Group I, claims 1 through 33, without traverse.

35 U.S.C. § 102(b) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 4,772,495 to Headrick et al.

Claims 1, 3, 4, 11, 17 through 19, 24, 28, and 29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Headrick et al. (U.S. Patent No. 4,772,495). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

1, 3, 4, 11, 17 and 18

Independent claim 1, as amended herein, is directed to a method of forming an ablative coating on at least a portion of a structure. The method comprises: forming a mold having a cavity configured to cooperatively receive the at least a portion of the structure; placing the at least a portion of the structure in the cavity of the mold; *preforming at least one spacer from a first ablative mixture; placing the at least one spacer between the surface of the structure and a surface of the mold within the mold cavity to establish a desired thickness of the ablative coating*; introducing a second ablative mixture that is substantially similar in composition to the first ablative mixture into the mold cavity such that it is in contact with the at least a portion of the structure; curing the second ablative mixture to bond the ablative mixture to a surface of the at least a portion of the structure.

The Examiner cites Headrick as disclosing a method of forming an ablative coating on at least a portion of a structure including forming a mold having a cavity configured to cooperatively receive the at least a portion of the structures; placing the at least a portion of the structure in the cavity of the mold; introducing an ablative mixture into the mold cavity such that it is in contact with the at least a portion of the structure; and curing the ablative mixture to bond the ablative mixture to a surface of the at least a portion of the structure. Applicants submit, however, that Headrick fails to teach all of the limitations of claim 1 of the presently claimed invention.

As amended herein, claim 1 recites the act of "performing at least one spacer from a first ablative mixture" and "placing the at least one spacer between the surface of the structure and a surface of the mold within the mold cavity to establish a desired thickness of the ablative

coating." While not specifically addressing the anticipation rejection of claim 1, the Examiner does cite Headrick (at col. 3, lines 59-66 and col. 4, lines 53-60) as teaching the placing spacers between the surface of the structure and a surface of the mold within the mold cavity to establish a desired thickness of the ablative coating. (See, Office Action, pages 8 and 9). Applicants respectfully disagree with such characterization of Headrick.

Specifically, the passages of Headrick cited by the Examiner state the following:

> The trowelable ablative coating composition was applied to the substrate panels by hand troweling. Even distribution was obtained by seating the substrate within a 12 inch X 12 inch frame and then applying and leveling the coating composition. The panels were allowed to cure for 24 hours at ambient temperature before the frame was removed and allowed to cure for a total of 10 day before further testing. Test panels were then cut into test specimens of appropriate size as discussed below. (Col. 3, lines 59-66).

> A trowelable ablative coating composition was formulated mixed as in Example I. A 0.5" thick layer of the coating was applied by hand trowel to each of eight 20" X 20" X 1/8" aluminum substrates according to the method described in Example I. A 0.5" thick layer of coating was applied to each of for 20" X 20" X 1/8" aluminum substrates by injecting the coating between the substrate and a covering mold. (Col. 4. lines 53-60).

Neither of the above passages discuss the use of spacers. Indeed the first passage doesn't even discuss the application of an ablative coating by way of molding. Nor do Applicants find any other teaching in Headrick regarding the use of spacers to establish a desired thickness of the ablative coating.

It is further noted that, while not directing such comments to the anticipation of claim 1, the Examiner states that Headrick does not disclose forming spacers out of any particular material, but that such a structural limitation is not shown or claimed to have an unexpected

effect on the method steps, and therefore is not given patentable weight. (See, Office Action, page 9). Applicants respectfully disagree.

In one example, the use of spacers formed of a material having substantially the same composition as the ablative material being introduced into the mold enables such spacers to remain a part of the final structure without negatively affecting the performance of the final structure (See, e.g., As-file Application, paragraphs 0044 – 0046; FIG. 4B).

Applicants, therefore, submit that claim 1 of the presently claimed invention is clearly not anticipated by Headrick.

Applicants further submit that claims 3, 4, 11, 17 and 18 are also allowable as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claims 17 and 18, while the Examiner cites Headrick at col. 3, lines 59-66 and col. 4, lines 53-60 (the same passages quoted hereinabove) as teaching configuring the mold cavity to define at least on stay-out zone, applicants fail to find any such teaching.

Additionally, with respect to claim 18, while the Examiner relies on the same passages of Headrick, such passages clearly fail to teach placing a boss about an area of the structure prior to introducing the second ablative mixture into the mold cavity and removing the boss subsequent to the curing of the ablative mixture.

Applicants, therefore, respectfully request reconsideration and allowance of claims 1, 3, 4, 11, 17 and 18.

19, 24, 28, and 29

Independent claim 19 of the presently claimed invention is directed to a method of forming an ablative coating on at least a portion of a structure. The method comprises: forming a mold with a cavity configured to cooperatively receive the at least a portion of the structure; placing a first coat of a release agent on a surface of the mold cavity; baking the mold at a temperature of approximately 200°F for approximately 6 hours; placing a second coat of the release agent on the surface of the mold cavity subsequent the baking; placing the at least a

portion of the structure in the mold cavity after the baking the mold and after placing the second coat of release agent on a surface of the mold cavity; mixing a salt-filled epoxy resin base, a fiber-filled polyamide hardener and a silicone resin modifier to form an ablative insulation mixture; introducing the ablative insulation mixture into the mold cavity so that the ablative insulation mixture contacts a surface of the at least a portion of the structure; and curing the ablative insulation mixture.

While the Examiner cites Headrick as teaching all of the limitations of the presently claimed invention (see, Office Action, page 4), Headrick clearly fails to teach mixing a salt-filled epoxy resin base, *a fiber-filled polyamide hardener and a silicone resin modifier to form an ablative insulation mixture.* Headrick discloses and epochlorhydrin/bisphenol A-type epoxy resin with an amide curing agent. Applicants fail to find any teaching of a *fiber-filled* polyamide hardener or a silicone resin modifier by Headrick.

Nor does Headrick teach placing a first coat of a release agent on a surface of the mold cavity, baking the mold at a temperature of approximately 200°F for approximately 6 hours and placing a second coat of the release agent on the surface of the mold cavity subsequent the baking.

As such, claim 19 is clearly not anticipated by Headrick. Applicants further submit that claims 24, 28, and 29 are allowable over Headrick as being dependent from an allowable base claim as well as for the additional patentable subject matter introduced thereby.

With respect to claim 29, Applicants submit that Headrick fails to teach mixing the recited components at a pressure which is above atmospheric pressure.

Applicants, therefore, respectfully request reconsideration and allowance of claims 19, 24, 28 and 29.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 4,772,495 to Headrick et al. in View of U.S. Patent No. 4,204,899 to Walker et al.

Claims 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Headrick et al. (U.S. Patent No. 4,772,495) in view of Walker et al. (U.S. Patent No. 4,204,899). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The 35 U.S.C. § 103(a) obviousness rejections of the claims are improper because the references relied upon by the Examiner fail to teach or suggest all of the limitations of the presently claimed invention.

Claim 2 of the presently claimed invention depends from independent claim 1. As set forth hereinabove, Headrick fails to teach or suggest all of the limitations of claim 1 of the presently claimed invention. More particularly, Headrick fails to teach or suggest performing at least one spacer from a first ablative mixture and placing the at least one spacer between the surface of the structure and a surface of the mold within the mold cavity to establish a desired thickness of the ablative coating. Nor does Walker teach or suggest such subject matter.

As such, claim 2 is allowable over Headrick and Walker at least by virtue of its dependency from claim 1, which is allowable. Additionally, while the Examiner cites Walker as teaching the heating of an ablative mixture to reduce a viscosity thereof prior to introducing the ablative mixture into a mold cavity, Applicants note that Walker discloses a process regarding

forming B-stage cured ablative sheets which may be subsequently adhered to a component and fully cured. As such, Applicants submit that one of ordinary skill in the art would not find the teachings of Walker particularly applicable to the direct molding and bonding of an ablative mixture to a structure including the curing of such ablative mixture.

Applicants, therefore, respectfully request reconsideration and allowance of claim 2.

Obviousness Rejection Based on U.S. Patent No. 4,772,495 to Headrick et al. in View of U.S. Patent No. 3,380,941 to Dittman et al.

Claims 5 through 9, 14 through 16, 25 through 27, and 30 through 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Headrick et al. (U.S. Patent No. 4,772,495) in view of Dittman et al. (U.S. Patent No. 3,380,941). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claims 5 through 9 and 14

Claims 5 through 9 and 14 of the presently claimed invention each depend from independent claim 1. As set forth hereinabove, Headrick fails to teach or suggest all of the limitations of claim 1 of the presently claimed invention. More particularly, Headrick fails to teach or suggest performing at least one spacer from a first ablative mixture and placing the at least one spacer between the surface of the structure and a surface of the mold within the mold cavity to establish a desired thickness of the ablative coating. Nor does Dittman teach or suggest such subject matter.

With respect to claim 7, Applicants note that Dittman does not teach or suggest, as asserted by the Examiner, a second curing stage which is carried out at a temperature of approximately 110° for approximately 8 hours. Each of the secondary curing operations disclosed by Dittman were at temperatures of 150° or above for time periods significantly different than 8 hours.

With respect to claim 14, and contrary to the Examiner's assertion, Dittman does not teach or suggest configuring the mold cavity such that the second ablative mixture introduced

therein will form an ablative coating of varied thickness over the surface of the at least a portion of the structure. Rather, Dittman simply indicates that the compound can be used "to cover very complex mechanical shapes to almost any desired thickness" indicating that, the compound may exhibit a first thickness on a first structure, and a second, different thickness on a different structure. Such a statement does not teach or suggest that the thickness of the ablative material may vary along the surface of a single structure.

Applicants, therefore, respectfully request reconsideration and allowance of claims 5 through 9 and 14.

25 through 27, and 30 through 32

Claims 25 through 27, and 30 through 32 of the presently claimed invention each depend from independent claim 19. As set forth hereinabove, Headrick fails to teach or suggest all of the limitations of claim 19 of the presently claimed invention. More particularly, Headrick fails to teach or suggest mixing a salt-filled epoxy resin base, *a fiber-filled polyamide hardener* and a silicone resin modifier to form an ablative insulation mixture. Headrick additionally fails to teach or suggest placing a first coat of a release agent on a surface of the mold cavity, baking the mold at a temperature of approximately 200°F for approximately 6 hours and placing a second coat of the release agent on the surface of the mold cavity subsequent the baking. Nor does Dittman teach or suggest such subject matter.

With respect to claim 26, Applicants note that Dittman does not teach or suggest, as asserted by the Examiner, a second curing stage which is carried out at a temperature of approximately 110° for approximately 8 hours. Each of the secondary curing operations disclosed by Dittman were at temperatures of 150° or above for time periods other than 8 hours.

Applicants, therefore, respectfully request reconsideration and allowance of claims 25 through 27 and 30 through 32.

Obviousness Rejection Based on U.S. Patent No. 4,772,495 to Headrick et al. and U.S. Patent No. 3,380,941 to Dittman et al., and Further in View of U.S. Patent No. 4,204,899 to Walker et al.

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Headrick et al. (U.S. Patent No. 4,772,495) and Dittman et al. (U.S. Patent No. 3,380,941), and further in view of Walker et al. (U.S. Patent No. 4,204,899). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 10 depends from independent claim 1. As set forth hereinabove none of Headrick, Dittman or Walker teach or suggest all of the limitations of claim 1 of the presently claimed invention. More particularly, Headrick, Dittman and Walker each fail to teach or suggest performing at least one spacer from a first ablative mixture and placing the at least one spacer between the surface of the structure and a surface of the mold within the mold cavity to establish a desired thickness of the ablative coating. As such, claim 10 is allowable at least by virtue of its dependency from an allowable base claim.

Applicants respectfully request reconsideration and allowance of claim 10.

Obviousness Rejection Based on U.S. Patent No. 4,772,495 to Headrick et al. in View of U.S. Patent No. 4,595,714 to McAllister et al.

Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Headrick et al. (U.S. Patent No. 4,772,495) in view of McCallister et al. (U.S. Patent No. 4,595,714). Applicants respectfully traverse this rejection, as hereinafter set forth.

Each of claims 12 and 13 are dependent from claim 1. As set forth hereinabove, Headrick fails to teach or suggest all of the limitations of claim 1 of the presently claimed invention. More particularly, Headrick fails to teach or suggest performing at least one spacer from a first ablative mixture and placing the at least one spacer between the surface of the structure and a surface of the mold within the mold cavity to establish a desired thickness of the ablative coating. Nor does McCallister teach or suggest such subject matter. As such, claims 12 and 13 are allowable at least by virtue of their dependency from an allowable base claim.

Applicants respectfully request reconsideration and allowance of claims 12 and 13.

Obviousness Rejection Based on U.S. Patent No. 4,772,495 to Headrick et al. in View of U.S. Patent No. 5,064,583 to Dagostino et al.

Claims 20 through 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Headrick et al. (U.S. Patent No. 4,772,495) in view of Dagostino et al. (U.S. Patent No. 5,064,583). Applicants respectfully traverse this rejection, as hereinafter set forth.

While claims 20 through 22 have been cancelled herein, the subject matter thereof has been introduced into independent claim 19. As such Applicants note that the combination of Headrick and Dagostino fails to teach or suggest all of the limitations of claim 19 of the presently claimed invention. It is particularly noted that Dagostino does not teach or suggest that the mold be baked at approximately 200° for approximately 6 hours. Rather, Dagostino teaches a heating process for approximately one half hour. Additionally, Dagostino fails to teach or suggest that a second coat of the release agent be placed on the surface of the mold cavity prior to the placing of the structure in the mold cavity. Rather, Dagostino teaches the reconditioning of mold plates by cleaning such plates and applying additional release agent to the plates "so that they are again ready for use in a *subsequent* molding operation at least after the silane-based mold release is allowed to cure as described above." (Col. 8, lines 27-34, emphasis added).

Applicants, therefore, submit that claim 19, as amended herein, is clearly allowable over the combination of Headrick and Dagostino.

Obviousness Rejection Based on U.S. Patent No. 4,772,495 to Headrick et al. in View of U.S. Patent No. 6,627,697 to Barney et al.

Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Headrick et al. (U.S. Patent No. 4,772,495) in view of Barney et al. (U.S. Patent No. 6,627,697). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 23 of the presently claimed invention depends from independent claim 19. As set forth hereinabove, Headrick fails to teach or suggest all of the limitations of claim 19 of the

presently claimed invention. More particularly, Headrick fails to teach or suggest placing a first coat of a release agent on a surface of the mold cavity, baking the mold at a temperature of approximately 200°F for approximately 6 hours and placing a second coat of the release agent on the surface of the mold cavity subsequent the baking. Nor does Barney teach or suggest such subject matter.

Additionally, while Barney generally refers to "open and closed die molding," Barney does not specifically teach or suggest introducing an ablative mixture into a mold cavity through at least two locations in the mold.

Applicants, therefore respectfully request reconsideration and allowance of claim 23.

Obviousness Rejection Based on U.S. Patent No. 4,772,495 to Headrick et al. and U.S. Patent No. 3,380,941 to Dittman et al., and Further in View of U.S. Patent No. 4,204,899 to Walker et al.

Claim 33 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Headrick et al. (U.S. Patent No. 4,772,495) and Dittman et al. (U.S. Patent No. 3,380,941), and further in view of Walker et al. (U.S. Patent No. 4,204,899). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 33 depends from independent claim 19. As set forth hereinabove neither Headrick nor Dittman teach or suggest all of the limitations of claim 19 of the presently claimed invention. More particularly, Headrick and Dittman each fail to teach or suggest mixing a salt-filled epoxy resin base, *a fiber-filled polyamide hardener* and a silicone resin modifier to form an ablative insulation mixture. Headrick and Dittman additionally fail to teach or suggest placing a first coat of a release agent on a surface of the mold cavity, baking the mold at a temperature of approximately 200°F for approximately 6 hours and placing a second coat of the release agent on the surface of the mold cavity subsequent the baking. Nor does Walker teach or suggest such subject matter.

As such, claim 33 is allowable at least by virtue of its dependency from an allowable base claim. Applicants respectfully request reconsideration and allowance of claim 33.

ENTRY OF AMENDMENTS

The amendments to claims 1 through 4, 6 through 8, 14, 17 and 18 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1 through 14, 17 through 19 and 23 through 33 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,

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